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EDITORIAL.

Agricultural Progress in Malaya.

Inevitably war conditions have interfered with agricultural trade in Malaya. Lack of shipping space, loss of markets, and the restrictive measures imposed by Governments have been the main difficulties encountered. Trade returns for 1940 do not reflect the full force of these difficulties, for the position became progressively unfavourable as the year advanced, and it must therefore be expected that the 1941 trade returns will more emphatically emphasize the adverse effect of the war on Malayan agricultural trade.

Perhaps the three industries most seriously affected by adverse marketing conditions were coconuts and pineapples, and to a less extent oil palms. The first-named is largely a peasant industry, where adverse conditions are most likely to result in privation. To a certain extent this also applies to the pineapple industry, where curtailment of canning means that the very perishable crop is lost to the producer. Palm oil producers have been able to find a market for the oil, but kernels — a valuable secondary product — have been virtually unsaleable and many estates have therefore ceased to prepare it for market.

On the other hand, rubber has enjoyed a successful year, notwithstanding shipping difficulties, increased costs of production and increased taxation. Tapioca and sago, too, have attracted higher prices and proved remunerative.

The above summarizes some of the major points brought out in our annual review of Malayan agricultural trade for the year 1940 which is included in this number. The article deals with crops grown for export, those that are grown for export as well as local consumption, the preparation of agricultural products, not necessarily of Malayan origin, for world markets, and crops grown entirely for local consumption. In the last-named category are included rice, vegetables, fruits, tobacco and coffee. In war-time these products assume a new importance. Efforts directed to encourage increased production — particularly of foodstuffs — have renewed interest amongst cultivators. We believe that in this direction lies the solution of the problem of guarding against privation caused by adverse world market conditions. There is evidence that cultivators and manufacturers alike are appreciating the possibilities of development in this sphere of activity. We note, for instance, the growing development of the tobacco industry which has recently taken

advantage of the demand of the local market for a cheap type of cigarette. The canning of products other than pineapples has attracted capital, while tea producers are now paying more attention than hitherto to supplying the local market.

If these developments are to extend it is insufficient for producers to manufacture the goods, they must offer them for sale in a form which will attract the greatest number of consumers. For instance, the number of people prepared to purchase tea by the pound or half-pound is limited; packing in smaller quantities extends the number of potential purchasers, while it is possible that loose tea will attract still more purchasers. Similarly, cigarette manufacturers have and can still extend sales by close consideration of market requirements. Packing of cigarettes adds to the cost, and we can see no reason why they should not be sold — as in the United Kingdom for instance — by weight.

Advertising pays, and we have yet to see any comprehensive scheme of advertising which brings before the public the range and quality of Malayan products. We are of opinion that the concerted action of producers of the wide range of Malayan products would stimulate local sales. It is possible that the increasing difficulty of obtaining imported products may force the consumers to seek local substitutes; it is good business, however, for the local producers to anticipate and encourage the local demand for their products.

Original Articles.

MALAYAN AGRICULTURAL TRADE IN 1940

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Prices.

War-time conditions have necessarily adversly affected trade generally and had their repercussions on prices. Furthermore, a comparison of market prices in 1940 with those of previous years fails to give a true position of agricultural industries on account of the marked increased costs of production and marketing. Where, therefore, an increased market price in 1940 is moderate, it may be taken that the producer has gained no increased profit. Unfortunately, however, the market prices of a number of products actually declined and in this connexion the copra and coconut oil trade suffered severely. Spices too were adversely affected by trade conditions and prices declined.

Rubber prices appreciated from an average of 31 cents per lb. in 1939 to an average of 37.55 cents in 1940, while sago and tapioca are the only other export products of importance which showed an improved price — pearl sago from $5.66 to $7.79 per picul, flake tapioca from $5.57 to $8.08 per picul. Coffee prices appreciated, but local production is not great and there is no export of Malayan coffee. Derris improved slightly, but it is doubtful whether this balanced the increased cost of production.

Canned pineapple prices were higher, but unfortunately the market was seriously restricted, and the Central Board of Pinapple Canners had perforce to reduce production.

The price of rice was subject to Government control throughout the year. Net imports were valued at over $50 million, an increase of $9 million over the previous year. Spices, including arecanuts, the export trade of which is considerable, all showed decreased prices.

The coconut industry has continued to suffer from very depressed prices, a fact which has severely hit the small-holder who is the principal producer. The market continued to absorb palm oil production, but kernels became virtually unsaleable, and production therefore ceased on many estates. The trend of prices may be seen in Table I.

Crop Production.

Malayan agricultural trade is comprised of products which may be conveniently grouped under four heads, *viz.*, crops grown entirely for local consumption; crops grown entirely for export; crops grown for both local consumption and export; and the preparation for world markets of products from neighbouring countries.

Table I.
Average Singapore Prices for Agricultural Products.

(per picul)

Product	Average Price for 1939	Highest Monthly Average Price 1940.	Lowest Monthly Average Price 1940.	Average Price for 1940.
	$	$	$	$
Rubber cents per lb. ...	31.00	38.69	35.77	37.55
Copra, sundried ...	3.60	3.80	2.39	3.08
Gambier ...	16.10	17.00	14.00	15.00
Sago, pearl ...	5.66	10.69	5.70	7.79
Tapioca, flake ...	5.57	10.00	6.50	8.08
Nutmegs, 110's ...	29.38	35.00	20.00	26.11
Pepper, black ...	8.11	8.62	6.25	7.29
Arecanuts, best ...	6.49	6.55	4.69	5.65
Pineapple canned cubes per case ...	3.49	4.85	4.85	4.85
Coffee, Palembang ...	12.24	15.88	10.94	13.00
Derris (on rotenone content) ...	20.13	24.50	22.00	23.09

Crops Grown Entirely for Local Consumption.

The chief crops in this category are rice, vegetables, fruits, coffee, and tobacco.

Rice. — The total area planted was 793,340 acres, as compared with 753,240 acres in the previous season. Production amounted to 335,138 tons of rice, or 6,307 tons less than in the previous season. Unfavourable climatic conditions accounted for this slight reduction in yield. Cultivators benefited by the rise in price of rice and consequently reaped a crop of record value. Based on the declared trade value of imports of rice, the Malayan crop was worth $26,654,000 as compared with $21,512,000 in the previous season.

Local production supplied only 35 per cent. of the total consumption, net imports being 635,360 tons, so that total consumption was 970,498 tons.

Vegetables. — War conditions have emphasized the desirability of growing more vegetables in this country. Propaganda has urged an extension of vegetable production, especially of market-garden crops, with the result that the area has increased by nearly 4,000 acres to a total of 27,000 acres. Maize, a valuable foodstuff, increased by 5,000 acres to a total of 8,000 acres, colocasia by 2,500 acres to a total of 3,000 acres, sweet potatoes by 2,500 acres to a total of 14,000 acres, and tapioca by 11,000 acres to a total of 47,000 acres. Summarizing these returns, and including other vegetables of less importance, the area under food crops, other than rice, at

the end of 1940 was 117,883 acres, as compared with 91,782 acres in 1939. It is impossible to estimate the total crop for this area, but it is evident that there was a material increase in food production.

The price of fresh local vegetables in the retail markets increased considerably. Despite the increase in local production, vegetables of many kinds were imported in increased quantity; in fact the net imports (canned vegetables, potatoes, dry and preserved vegetables, onions and garlic and fresh vegetables) constituted a record at 69,012 tons, as compared with 61,561 tons in the previous year. Of this total, fresh vegetables net imports were 21,891 tons, an increase of 6,905 tons over 1939 which was the previous high record year. The value of net imports of vegetables was over $\$7\frac{1}{4}$ million, the highest figure since 1929. It is possible that the increased net imports are in part due to the demands of the Services and to the inclusion in trade returns of deck cargo which previously was frequently not included in ship's manifests.

Fruits. — The area under fruits increased by 13,341 acres to a total of 193,035 acres. Of this total 61,280 acres were under pineapples, 79,898 acres mixed fruit trees, and 46,363 acres bananas. Mixed fruits are mostly grown in Malay homesteads and are often a useful source of income. No large gluts were reported and prices were usually good. The banana area increased by 10,819 acres to a total of 46,363 acres. Fairly extensive areas exist in certain States and the large quantity of fruit obtained found a steady market in centres of population in Malaya. No portion of the crop was exported.

Net imports of fresh fruits were maintained at about the 1939 level, with 23,610 tons. The value of net imports, however, was $5,357,646 the highest figure recorded, and an increase of $1,430,155 over the previous year.

Tobacco. — The local tobacco industry experienced a favourable year, due in part to shipping difficulties, the increased import duty, and in particular to the development of a local cigarette manufacturing industry. The locally-grown leaf continues to be of the cheroot type and generally unsuitable for the better grade of "smokes." Chinese-owned cigarette factories have started operations in several centres and there are now at least thirteen such factories, all using almost entirely local leaf. Necessarily the finished product, although a fairly well made and efficiently packed cigarette, is of a grade which does not command a market outside the labouring classes. It has tended to supersede the cheap cheroot rather than to compete with existing trade in cigarettes. It is possible that the existing factories are more than sufficient to satisfy local demand for this cheap grade cigarette and that unless a more suitable type of leaf is grown and curing of tobacco undertaken by growers, no further extension of the local manufacturing trade may be expected; on the contrary it is probable that some of the existing cigarette-making machines will cease work.

Net imports of tobacco were 12,659,246 lbs., which is about the average of the past 8 years. Value of net imports was $19,566,803, the highest since 1930, when the figures was $23,713,031.

Coffee. — Coffee is still grown in certain parts of the country, notably on the western coastal belt, but is relatively unimportant. The total area at the end of 1940 was 16,522 acres, a decrease of 4,067 acres in comparison with 1939. The produce is sold locally.

Crops Grown Entirely for Export.

The principal crops grown entirely for export are rubber, canned pineapple, oil palm products, gambier and derris.

Rubber. — The second International Agreement (1st January 1939 to the end of 1943) for the regulation of rubber production was in operation throughout the year. Malaya's basic quota for 1940 was 642,500 tons out of a world quota of 1,541,550 tons and the international quarterly releases were 80, 80, 85 and 90 per cent. respectively, averaging 83¾ for the year. Malaya's domestic releases under the scheme were 2½ per cent. below the international releases during the second and third quarters of the year.

The rubber producing industry experienced a favourable year. The average Singapore price for the year was 37.55 cents per lb. as compared with 31.00 cents in 1939. Costs of production increased, due largely to increased wages. The production of rubber amounted to 549,327 tons, as compared with 361,484 tons in 1939. Shipments during the year were 538,448 tons as compared with 375,474 tons in the previous year. The value of net exports in the year under review was $449,780,904, as compared with $261,051,647 in 1939, and $198,650,206 in 1937. Local consumption of rubber by manufacturers of various kinds of goods amounted to 1,382 tons, as compared with 511 tons in 1939.

Canned Pineapples. — The pineapple canning industry is centred in Singapore, Johore and Selangor, but only a small proportion of the fruit is now grown in Singapore. Exports of canned pineapples amounted to 40,243 tons, valued at $8,435,768, as compared with 65,802 tons, valued at $9,928,137 in 1939.

The industry experienced a difficult year, firstly on account of labour trouble and subsequently owing to war conditions. Strikes took place in Johore and Singapore factories in January and resulted in considerable loss to growers and dislocation of normal factory work. Further labour troubles were experienced in Johore in July.

Restriction on the import of canned pineapples into the United Kingdom were instituted by the Ministry of Food in March, and later in the year they assumed complete control, imports being allowed only on contract with the Ministry. In June, restrictions were placed on the export of Malayan canned pineapple to Canada — Malaya's second most important consumer — and only shipments of Golden Grade were permitted. This restriction followed the restriction of the import of Canadian canned fruits into the United Kingdom with the consequent Canadian surplus production to be absorbed in the domestic markets.

The Central Board of Pineapple Packers continued to control production and to fix the price of the canned product. The operations of the Board proved particularly useful during this most difficult period.

Oil Palm Products. — Palm oil finds a restricted use locally in the manufacture of soap, but in the main, the palm oil and kernels produced locally are exported.

The production of palm oil in 1940 was 57,972 tons, while net exports were 56,091 tons, valued at $6,257,315. Kernel production was 9,611 tons, and net exports 9,219 tons, valued at $406,230.

Crops of oil were below expectation owing to the effect of the prolonged drought prevailing during the former year. More than 90 per cent. of the exports were in bulk. There are large and well-equipped bulking stations at Singapore, Straits Settlements, and Port Swettenham, Federated Malay States. The remainder of the oil was exported in steel drums. Palm kernels are exported in sacks.

All oil destined for the United Kingdom is now sold under contract with the Ministry of Food. The closing of the markets for kernels on the Continent of Europe coupled with the decision of the Ministry of Food to purchase its requirements of kernels elsewhere adversely affected the local industry. Existing stocks were eventually sold to the United States of America, but in view of the very low price obtained it is not expected that producers will continue to prepare kernels for sale. Attempts were made to interest Indian oil seed crushers in palm kernels, but the outcome is still in doubt.

Net exports of palm oil amounted to 55,990 tons, as compared with 59,717 tons in 1939. This decrease is accounted for partly by drought conditions and partly by the difficulty in obtaining shipping space; at the end of the year stocks of oil on estates and at bulking stations were much above the average.

Derris. — The market price of derris was maintained at slightly higher prices than those obtained during the previous year. Net exports at 1,258 tons valued at $586,274 were a little less than in 1939. The United States of America continued to import rather more than half the Malayan exports while the bulk of the remainder went in about equal quantities to the United Kingdom and Japan.

Gambier. — Gambier appears to be a dying industry. Net exports in 1940 were only 820 tons, valued at $211,745, the first time, as far as records are available, that the figure has been under 1000 tons.

Crops Grown for Local Consumption and Export.

The chief amongst crops grown both for local consumption and export are copra and coconut oil, tea, tapioca and sago.

Copra and Coconut Oil. — The copra market has been in a very depressed condition during the year, the local price being the lowest on record. The continued development of the coconut oil trade has relieved the situation to some extent, net exports being 70,027 tons, valued at $8,291,617 as compared with 61,898 tons, valued at $7,133,925 in 1939. Fresh coconut exports were well maintained, but this trade is insufficient materially to affect the general situation.

Fresh nuts and coconut oil find a wide use locally, and propaganda has been directed to encourage further development in this direction. It is probable that local consumption has in fact increased, for although the area under the crop has

been fully maintained, the total export surplus, in term of copra equivalent, has steadily decreased in recent years.

Tea. — Tea planting is restricted under the terms of an agreement between Malaya and the International Tea Committee.

Producers have continued to develop their local trade and in the year under review 838,876 lbs. of Malayan tea were sold for consumption in this country as compared with 618,472 in the previous year. Exports are almost entirely to the United Kingdom under contract with the Ministry of Food. Shipments of Malayan tea during 1940 amounted to a total of 662,863 lbs., as compared with 647,871 lbs. in 1939. Net imports of tea increased to 5,622,316 lbs., so that Malayan tea consumed locally was 16.1 per cent. of the total Malayan consumption.

Prices of tea sold locally were at the same level as during the previous year. The average prices for 1940 of tea sold by Malayan estates on contract with the Ministry of Food were 12.855d. per lb. for highland and 11.985d. for lowland, f.o.b. Malayan ports.

Tapioca. — The trade in tapioca was well maintained in 1940. Net exports were 15,117 tons, valued at $1,560,326, as compared with 16,639 tons, valued at $1,230,157 in 1939. The Singapore average price improved considerably, flake tapioca, for instance, averaging $8.08 per picul for the year as compared with $5.57 in 1939.

Sago. — There exists some confusion between tapioca and sago, and it is possible that trade returns regarding sago refer in fact to tapioca. Net exports, representing possibly mainly local production, decreased considerably in 1940, being 2,557 tons, valued at $1,530,510, as compared with 9,031 tons, valued at $1,554,588 in 1939. The main decrease was in sago flour, but the prices obtained compensated for the smaller trade. The average prices per picul in Singapore for 1940 were:— pearl sago $7.79, flour $4.95, as compared with $5.66 and $3.67 respectively in 1939.

Preparation of Agricultural Products for World Markets.

Malaya continues to be a centre of importance for the preparation of agricultural products for world markets. Much of the "raw material" for this trade comes from the Netherlands Indies and other Dutch and British possessions in the Malayan Archipelago. Singapore and to a lesser extent Penang are the two principal centres of this trade.

At one time wet slab rubber was imported to Singapore from the Netherlands Indies for processing, but in recent years increasing attention has been given to this in the country of origin.

Chief amongst the crops imported for conditioning in this country are copra, arecanuts, sago, tapioca, pepper, gambier, mace, and nutmegs. The imports of these products in 1940 amounted to 251,300 tons, as compared with 260,000 tons in 1939 and 239,000 in 1938.

A feature of the Malayan trade in copra is the large amount which is imported, principally from the Netherlands Indies. For the most part this is a low quality product, utilized for oil expression and to a lesser extent for grading with supplies

of Malayan origin. Instead of the usual net export the figures for 1940 show a net import of copra, due to the dislocation of European markets, lack of shipping space, and to a further increase in the local production of coconut oil. Net exports of coconut oil were 70,027 tons, being about 9,000 tons greater than in 1939. Production of coconut cake increased, but there was a decrease in exports due in part to the greater demand for the cake in Malaya, principally for feeding purposes.

Sago and tapioca are imported in a raw form and manufactured locally into various grades for export. Pepper imports were well maintained. Part of the imports are in the form of black pepper, converted into white pepper in Malaya, while a proportion is exported without re-conditioning. Arecanut imports were about the same as in 1939; part of the imports are regraded for export.

Tables IIA and B show the trade in the chief products and also the value of the entrepôt trade and that of conditioning agricultural products for the world markets. Table IIB shows the chief products imported into Malaya for local consumption.

Table IIA.

Export Products.

Imports and Exports of Certain Agricultural Products 1940. *

Product	Imports		Exports		Net Exports	
	Tons	Value $	Tons	Value $	Tons	Value $
Rubber ...	234,300	181,386,000	772,800	631,167,000	538,500	449,781,000
Coconut Products ...	111,700	5,655,000	179,400	15,243,000	67,700	9,588,000
Pineapples ...	—	—	40,200	8,436,000	40,200	8,436,000
Oil Palm Products ...	100	12,000	65,300	6,664,000	65,200	6,652,000
Arecanuts ...	50,400	4,581,000	94,300	8,874,000	43,900	4,293,000
Tapioca ...	6,200	705,000	21,300	2,266,000	15,100	1,561,000
Sago ...	64,600	5,422,000	67,200	6,953,000	2,600	1,531,000
Gambier ...	3,600	685,000	4,400	896,000	800	211,000
Derris ...	100	55,000	1,400	641,000	1,300	586,000
Pepper ...	13,200	2,206,000	9,800	1,890,000	— 3,400	— 316,000
Nutmegs and Mace ...	1,600	526,000	1,300	564,000	— 300	+ 38,000

* Imports to nearest 100 tons; values to nearest $1,000
+Net exports.
—Net imports.

Table IIB.

Import Products.

Import and Exports of Certain Agricultural Products 1940.*

Product	Imports		Exports		Net Exports	
	Tons	Value $	Tons	Value $	Tons	Value $
Rice and Padi ...	788,700	62,387,000	135,500	10,492,000	653,200	51,895,000
Livestock, Meat, Milk and Butter ...	57,400	21,315,000	3,900	2,128,000	53,500	19,187,000
Tobacco ...	6,700	22,302,000	1,100	2,736,000	5,600	19,566,000
Sugar ...	135,500	16,034,000	20,200	2,337,000	115,300	13,697,000
Feeding Stuffs ...	220,800	6,236,000	15,600	521,000	205,200	5,715,000
Vegetables ...	85,200	9,047,000	16,200	1,800,000	69,000	7,247,000
Fruits ...	28,100	6,424,000	4,400	963,000	23,700	5,461,000
Groundnuts & Groundnut Oil ...	21,300	3,724,000	3,900	662,000	17,400	3,062,000
Poultry and Eggs ...	7,100	2,779,000	800	298,000	6,300	2,481,000
Coffee ...	11,600	2,850,000	3,900	793,000	7,700	2,057,000
Tea ...	2,800	2,146,000	600	737,000	2,200	1,409,000

* Imports to nearest 100 tons; values to nearest $1,000.

Table III.

Gross Agricultural Trade of Malaya.

Year.	Gross Agricultural Trade ,000		Gross Trade in Rubber ,000		Gross Agricultural Trade Less Rubber ,000		Gross Agricultural Trade Less Rubber and Rice* ,000	
	Quantity Tons	Value $	Quantity Tons	Value $	Quantity Tons	Value $	Quantity Tons	Value $
1935 ...	2,958	533,000	765	327,000	2,193	206,000	1,194	155,000
1936 ...	2,998	609,000	688	398,000	2,310	211,000	1,248	152,500
1937 ...	3,249	875,000	895	628,000	2,354	247,000	1,497	189,000
1938 ...	3,125	566,000	683	347,000	2,442	219,000	1,419	152,000
1939 ...	3,259	713,000	731	487,000	2,528	226,000	1,485	162,000
1940 ...	3,335	1,068,900	1,007	812,600	2,328	256,300	1,404	183,400

* Including padi.

Table IV.

Annual Net Imports and Exports of Agricultural Products, Malaya.

Year.	Net Imports*		Net Exports† (excluding Rubber)		Excess of Imports over Exports (excluding Rubber)		Net Exports of Rubber		Excess of Total Imports over Exports	Excess Value of Exports over Value of Imports
	Quantity Tons	Value $	Quantity Tons	Value $	Quantity Tons	Value $	Quantity Tons	Value $	Quantity Tons	Value $
1923	643,000	101,600,000	206,600	43,100,000	436,400	58,500,000	181,700	227,200,000	254,700	168,700,000
1924	694,600	118,400,000	219,000	51,600,000	475,600	66,800,000	152,500	189,900,000	323,100	123,100,000
1925	744,800	133,100,000	218,700	48,600,000	526,100	84,500,000	161,800	519,000,000	364,300	434,500,000
1926	857,300	157,400,000	225,800	50,000,000	631,500	107,400,000	243,400	547,500,000	388,100	440,100,000
1927	956,000	167,400,000	207,500	42,700,000	748,500	124,700,000	190,700	351,400,000	557,800	226,700,000
1928	921,400	158,900,000	230,700	44,900,000	690,700	114,000,000	260,100	262,900,000	430,600	148,900,000
1929	1,004,500	171,700,000	254,700	44,000,000	749,800	127,700,000	418,000	353,700,000	331,800	226,000,000
1930	1,022,300	150,800,000	244,100	37,800,000	778,200	113,000,000	421,000	199,600,000	357,200	86,600,000
1931	883,200	92,100,000	241,200	26,700,000	642,000	65,400,000	393,600	99,300,000	248,400	33,900,000
1932	737,800	74,200,000	253,500	29,000,000	484,300	45,200,000	386,000	68,100,000	98,300	22,900,000
1933	770,000	66,700,000	265,700	25,600,000	504,300	41,100,000	445,700	101,400,000	58,600	60,300,000
1934	871,200	78,700,000	272,800	23,400,000	598,400	55,300,000	465,800	207,900,000	132,600	152,600,000
1935	885,100	81,100,000	314,500	40,000,000	750,600	41,100,000	415,700	191,100,000	154,900	150,000,000
1936	991,900	87,100,000	311,400	36,700,000	680,500	50,400,000	352,300	208,500,000	328,200	158,100,000
1937	1,081,200	103,200,000	328,500	42,500,000	752,700	60,700,000	468,200	341,200,000	284,500	280,500,000
1938	1,110,700	102,900,000	325,300	33,700,000	785,400	69,200,000	370,800	198,700,000	414,600	129,500,000
1939	1,211,600	107,100,000	319,100	36,900,000	892,500	70,200,000	375,500	261,000,000	517,000	190,800,000
1940	1,171,100	134,200,000	233 200	32,800,000	937,900	101,400,000	538,500	449,800,000	399,400	348,400,000

* Imports include coir cordage and fibre, mats and matting, padi and rice, coffee, tea, kapok, mace and nutmegs, pepper, ginger, groundnuts and groundnut oil, sugar, tobacco, vegetables, livestock for food, meat, leather goods, milk, butter, poultry and eggs, feeding stuffs for animals, ataps, cloves, castor oil, gingelly seed and oil, fruits, citronella oil and flowers.

† Exports include rubber seed, coconut products, palm oil and kernels, canned pineapples, arecanuts, sago, tapioca, derris root, hides and skins, gambier, patchouli leaves and oil, mace and nutmegs, pepper and gambier.

The Value of Agricultural Trade in Malaya.

Agricultural imports exceeded exports by 399,428 tons, a decrease of 117,611 tons over 1939, but the value of agricultural exports exceeded the value of imports by $348,461,668, the highest figure since 1926. This high figure is largely due to the increased net exports and value of rubber, the net exports of rubber of 538,448 tons constituting a record, while the value of net exports of rubber, $449,780,904, has not been exceeded since 1926.

The gross agricultural trade of Malaya is summarized in Table III which shows clearly the important part played by rubber, the value of the gross trade in rubber in 1940 being nearly 80 per cent. of the value of the gross agricultural trade. Table IV shows the balance of agricultural trade since 1923.

Malaya's agricultural trade in 1940 was very profitable, although, largely owing to the heavy imports of rice, the country still relies on outside sources for some of her most essential needs.

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NOTES ON PLANT DISEASES IN 1940

BY

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The notes which follow are published as a record of observations on certain plant diseases and organisms connected therewith and include brief accounts of other problems investigated during the year 1940.

Oil Palms.

Replanting Problems and Stem Diseases.

The recommendations given during 1939 for disposal of stems felled in replanted areas have not been altered. Observations on marked palms were continued and collections of the fungus flora on decaying stems were made periodically in certain areas. Two of the more important fungi associated with decay of leaf bases and stem tissue of felled stems are *Fomes noxius* and *Ganoderma applanatum* var. *tornatum*. The former fungus has developed only in stems with leaf bases already infected by this fungus at the time of felling, but it is uncertain whether Ganoderma was originally present or not in the leaf bases of the few stems which have been decayed by this fungus. This species of Ganoderma has not, however, been definitely connected with a stem or root disease of standing oil palms in Malaya but in view of its apparent connexion with a stem decay of palms replanted by felling (see below) it is intended to keep its activities under observation in case it should be found to cause injury to palms in replanted areas.

It is of interest to record that the majority of the stems in one area which were healthy when felled four years ago have not yet begun to decay.

Replanting by Felling Tall Palms.

A line of twenty tall palms "replanted" in 1939 by felling after cutting the roots on the "off" side of the stem was kept under observation during the year. Excellent new growth has occurred in the group in which the stems were mounded to the crown. It was found necessary to cut away all the petioles close to their point of attachment in order to avoid crowding and malformation in the new growth. Growth in all the palms is now upright but flowering has not yet occurred. The leaf bases of the mounded stems have decayed and are full of palm roots throughout the length of the stems. These roots, however, are feeding roots of adjacent standing palms and have not emerged from the buried stems whose new root systems are confined to the original root forming tissue at the base of the stem.

The stems of some of the palms which were felled but not mounded have decayed (*Fomes noxius*) and the stem tissue of one palm has become infected with *Ganoderma applanatum* var. *tornatum* and is decaying. The new growth in this palm has made slow progress since felling.

Bronzing and Wilting.

Investigations into the cause or causes of the premature yellowing and ageing of the leaves of palms on certain areas were continued. Symptoms typical of the trouble have not yet developed in young palms which are growing in deficient nutrient solutions. In these solutions the absence of nitrogen soon results in yellowing; the absence of magnesium in chlorosis and browning and death; and the absence of potassium in yellowing accompanied by brown "scorch" of the tips of the pinnae. Lack of phosphorus or calcium has not hindered growth up to date, while no definite effect has been observed with lack of the minor elements zinc, boron, copper, manganese and iron. Extracts from the soil and sub-soil of an affected area are now being added to certain of the nutrient solutions and it is hoped, now that a technique for growth in nutrient solutions has been worked out, to continue with further investigations when time permits.

Groups of palms on an affected area were root pruned in February. All the roots on one side of each palm were cut either close to the stem or at 10 ft. from the stem. Mixtures of artificial manures or compost or wood ash were added when the soil was replaced in the pruning trenches. Nine months later the palms had formed a new root system on the pruned side. The original roots which were cut close to the stem died back to the stem but those pruned at 10 ft. did not all die back. Most of these roots produced new branch roots at about 2 ft. back from the cut end. A second application of manures was forked in during November. Up to now there has been no improvement or deterioration in the appearance of these palms.

Coconuts.

During the heavy rains experienced in Lower Perak in the last quarter of the year an outbreak of leaf disease due to *Marasmius palmivorus* occurred on dwarf coconut palms on an estate in this district. Although "tall" coconut palms are not immune to attack it is probable that the apparent greater susceptibility of dwarf coconut palms to attack by this fungus is connected with greater humidity in the region of the crown and to an earlier accumulation of debris in the crown of these low growing palms. The treatment adopted on this occasion involved pruning the affected leaves, cleaning out debris from the crown and improving the drainage to allow more rapid removal of surface water.

Arecanuts.

A curious stem disease of young palms occurred on a small estate in Pahang following a prolonged period of dry weather. Cracks developed in the "bark" of the stems on the side facing west and lesions of various sizes were formed. Later a black rot developed in the inner stem tissues on this side and extended for several feet up and down the stem. The fungi isolated from the decaying tissue (*Pestalozzia* sp. and *Thielaviopsis* sp.) were inoculated into stems of young palms at Serdang but made no progress in the tissues. It was considered that the trouble was initiated by sun-scorch and aggravated by the drought.

Tea.

Branch canker of tea has now been recorded on Cameron Highlands. The cankers were observed on the upper surface of horizontal branches of bushes receiving their second major pruning. The area is unshaded and, from the situation of the cankers, it was considered that sun-scorch had occurred during the first pruning period three years previously. The fungus isolated from the cankers was *Diplodia* sp. and it is of interest to note that this fungus has in the past been associated with sun-scorch and cankers of exposed lateral roots of rubber trees in this country during wintering.

Direct treatment of the cankers on tea branches was not considered necessary or advisable and it was recommended that the establishment of overhead shade would be advisable or that temporary shade during pruning might be obtained by laying the prunings on top of the pruned bushes. It is possible, however, with this method that the new growth might be injured when the prunings are later removed.

Cinchona.

A fatal root and collar rot of two young trees in a block of hybrid cinchona was identified as being due to attack by the fungus Rosellinia. As this fungus can do serious damage to cinchona, prophylactic measures were quickly and effectively adopted.

Cereals.

A leaf spot of ragi (*Eleusine coracana*) due to a species of Piricularia occurred severely on a plot at Serdang. Spraying proved ineffective as the leaves did not retain the fungicide. Experiments with applications of phosphorus and potash applied with the minimum of nitrogen and of applications of lime to alter the soil reaction were spoiled by an invasion of rats. Cross inoculations with the ragi fungus on rice plants did not succeed, so it is probable that the strain of the fungus on ragi, although morphologically similar to the padi "blast" fungus (*Piricularia oryzae*) is not likely to affect padi.

Jobs Tears (*Coix Lachryma Jobi*) at Serdang was heavily infested by the leaf spot fungus *Phyllachora Coicis*. The attack occurred after flowering and did not cause much damage.

Grasses.

Helminthosporium ocellum did minor damage to Napier and Merker grass at Serdang. A different species of Helminthosporium occurred on Guinea grass and caused appreciable damage to plots on heavy soil; damage was less under shade.

Applications of Malachite green and Cheshunt compound were given with good effect to golf greens affected with "brown patch" associated with a species of Pythium.

Fruits.

PINEAPPLE.

Work on heart rot of pineapple plants continued but the cause is still obscure. Slips selected from parent plants the fruits of which exhibited resistance to fruitlet brown rot were sent for field trial to Johore.

CITRUS.

A root disease of grapefruit associated with wet weather and attack by *Poria hypobrunnea* was recorded from Cameron Highlands.

RAMBUTAN.

Ganoderma pseudoferreum was isolated in culture from a root disease.

DURIAN.

Die back of buddings appears to be due primarily to physiological causes. The fungi associated with the trouble are *Diplodia* sp. and *Phomopsis* sp.

Vegetables.

TOMATO.

A rot of ripe fruits following skin cracks was recorded. The rotting organism was the fungus *Oospora lactis parasitica*.

A good crop of cherry tomatoes was obtained by the method called Hydroponics (liquid culture) but the yield from plants of ordinary tomatoes (var. Ponderosa and var. Early Red) was small owing to a number of causes. Experience in the methods was gained, however, enabling advice to be given to local horticulturists who enquired about this subject.

ONION.

"Leaf blight" and "neck-rot" damaged a crop of spring onions in Kinta, the fungus responsible for the disease being *Macrosporium* (*Alternaria*) sp.

BEANS AND PEAS.

(a) A disease with symptoms resembling bean mosaic destroyed all the experimental plots of Chinese long bean at Kuala Lumpur. This type of disease is seed-borne and can also be communicated by touch.

(b) Anthracnose did considerable damage to beans and peas in some localities at Cameron Highlands.

(c) Nematodes injured red bean in one or two localities in Perak.

(d) Heavy dressings of wood-ash (from oil palm bunch refuse) inhibited germination of soya bean in experimental plots at Serdang.

KELADI.

Corm rots of keladi were associated with attacks by *Sclerotium Rolfsii, Rhyzoctonia* sp. and *Sphaerostilbe repens*, while leaf blight due to Phytophthora also occurred in many districts but did not do serious damage.

PARSLEY.

The occurrence of *Bacillus caratovorus* on parsley was noted. A soft rot resulting in complete disintegration follows the entry of this organism *via* wounds, and, in wet weather, rapid spread may occur and many plants in a bed or box can be destroyed. Rapid removal of infected plants helps to check the spread of the rot.

Pepper.

A serious outbreak of foot rot was reported from Sarawak. The causal fungus was a species of Phytophthora not yet identified. A variety of pepper highly resistant to a foot rot caused by *P. Palmivora* var. *pipers* has been developed in Sumatra and it was suggested that this variety be obtained and given a trial.

Miscellaneous Crops.

CASTOR OIL.

An area of young plants at Serdang was destroyed by slime disease (*B. Solanacearum*).

SIREH.

Specimens of *Sclerotium Rolfsii* root and collar rot were received from a number of districts.

MANILA HEMP.

A leaf disease is causing some damage at Serdang. A number of fungi have been isolated of which Helminthosporium may be important. The symptoms do not exactly resemble those described for any of the leaf diseases of Manila hemp in other countries, and there is some evidence that mites may be the primary cause of the local trouble.

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Selected Article.

DIGGING FOR VICTORY.*

Since the outbreak of war the people in Malaya have been exhorted, by various methods of propaganda — radio talks, pamphlets, slogans, articles in the papers — to grow more food. And now we are to have a book on the same subject! The desirability of Malaya producing a greater proportion of her food requirements is, however, a peace-time question; the advent of war has but served to add further and very powerful reasons in favour of home production.

Briefly stated the peace-time facts were that we produced but one-third of our rice requirements and one-half of our other foodstuffs. Remembering that 99 per cent. of the population of this country are rice-eaters, and that one of the main imports was perishable fresh foods, this means that at the best of times we live rather a hand-to-mouth existence, so that failure of crops or internal disturbance in one of the chief producing countries, or dislocation of shipping through any unforeseen cause, results not only in labour difficulties in Malaya, but in hitting the pocket of everybody, for in such circumstances prices immediately soar. One has only to remember the rice shortage in 1919-21 which cost the Malayan Governments no less than $42,000,000 to which has to be added the unascertained losses to employers of labour, and the fact that the private individual had to pay a very high price for his rice supplies. The present writer is not, however, asking his readers to plant rice — very few of them have facilities for this form of cultivation, — but to remind them that a similar position may at any time arise in connexion with any other foodstuff.

If this be the peace-time position, what then of war-time conditions? Under these conditions the possibility of a shortage through the causes stated above are accentuated, and while the possibility of famine through climatic conditions remains the same, there is the added possibility that crops may not be planted or may be destroyed by warring nations, or that the crop may be directed to other markets.

While the above are real reasons for increasing local production and not mere hypothetical cases, there are other war-time reasons which make it imperative that Malaya should produce more of her own food requirements. Firstly, shipping difficulties: more ships are required to carry troops and munitions to the various theatres of war, while owing to enemy action, fewer ships are available. War requirements *must* come first; therefore, if necessary, ships which normally carry foodstuffs and "luxury" cargos will be taken from their normal trade routes to cope with the more urgent requirements. It must be remembered that a number of ships which in peace-time were engaged on passenger and general cargo work have been converted to armed merchantmen — part of the Royal Navy. Furthermore, the production of foodstuffs imported may necessitate the employment of people in its production who are urgently needed for war work.

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* By D. H. Grist. Published in the Magazine of The General Clerical Service Association, F.M.S., Vol. II. No. 1 January—March 1941.

Secondly, there is this somewhat complicated system of exchange. All that need be said in this place is that money spent outside the British Empire on non-essentials reduces our purchasing power of war materials.

"Digging for Victory" therefore is no empty slogan; in Malaya it is of paramount importance, as well for the Empire effort, the welfare of Malaya, and the health and prosperity of the individual.

No reminder is needed that the cost of vegetables has risen enormously during the past year or so. Comparing the market prices given in the F.M.S. Gazette of 29th September, 1939, with those stated in the Gazette of 25th March, 1941, and considering only vegetables which can readily be grown in Malaya and are usually part of the diet of readers of this magazine — such as garlic, brinjal, chillies, cucumber, long beans, pumpkins, gourds — the increase in price is nearly 50 per cent.

The reader may argue that with the best will in the world he is unable to assist in producing food — his compound is too small, his time too restricted, or his knowledge insufficient. "Where there's a will there's a way," and there must be very few in the wage-earner's class who could not, if they would, grow some, at least, of the food required for the family. It is surprising what a large quantity of vegetables may be produced in the course of a year from a small plot of ground. A *changkol* is cheap enough — and no other implement is essential; all the seed required will cost only a few cents; all the manure is at hand — ashes from the kitchen, grass cuttings or leaves from the wayside. Time can be found for anything that one is convinced is worth while. Knowledge of all that is required may be obtained from free pamphlets, inexpensive books, and from the Department of Agriculture.

Lest readers consider that this article is a counsel of perfection a few hints on how initial difficulties may be overcome may be of value.

Land. If indeed you have no available land, perhaps your neighbour has land and to spare. Go into partnership. Failing any such arrangement, many vegetables may be grown successfully in boxes — chillies, bayam, cucumber, watercress and cabbage immediately suggest themselves in this connexion.

Seed. For local vegetables, the writer has found the seed sold by Chinese seed merchants in and around markets very satisfactory and cheap. Should any difficulty be experienced in the purchase of seed, write to the Department of Agriculture for a list of seed merchants in your neighbourhood.

Time. The writer finds it difficult to make any concrete suggestions as to when the work can be done. The last hour before dark is the most pleasant time for gardening, when it is comparatively cool.

Manures. As already suggested, ashes and grass cuttings, which are readily available, are good manure. Cattle manure is expensive and introduces a host of weeds in the garden. It is not essential; if the garden is large enough, make compost (the Department of Agriculture will tell you how to do so). Prawn dust and fish waste are valuable manures and are usually not expensive.

Information. The Department of Agriculture has published a leaflet on "The Cultivation of Allotments by Tamil Labourers" in English and Tamil. Quarterly journals on agriculture in Malay, Tamil and Chinese are also published by the Department, which from time to time contain articles of interest to vegetable gardeners. All the above publications are free of cost to applicants in the F.M.S. and S.S. The Department of Information, Singapore, has published two useful pamphlets which are supplied free on application, *viz.*, "Grow Your Own Food" and "How to Cook Malayan Vegetables."

Those who require more complete information on the subject may be referred to "Vegetable Gardening in Malaya," just published by the Department of Agriculture at $2 post free.

Finally, the Department of Agriculture is prepared to give any advice on the subject. Refer your difficulties in writing to the nearest Agricultural Officer, or write to the Department of Agriculture, Kuala Lumpur.

Dig for Victory and you will not only help the war effort but will benefit your own pocket.

Review.

The Diseases of the Coconut Palm.

By H. R. Briton-Jones. Revised by E. E. Cheesman. pp. XVI + 176 + 37 plates. London. Bailliere, Tindall and Cox. 1940. 10/6d net.

The manuscript of this book was completed only a short time before the author's death in November 1936. Publication was not, however, immediately possible, and the text has since been revised and brought up to date by Prof. E. E. Cheesman.

In setting out to write what he modestly called 'this handbook' the aim of Dr. Briton-Jones was, in his own words, 'to give those growers who have not had the advantage of a scientific training, and those agricultural officers who, through pressure of work in other directions or lack of library facilities, are unable to keep up with modern scientific literature, an account of the diseases of the tall coconut palm in simple English.' Dr. Briton-Jones has more than achieved his object. He has produced a book, characterized above all by a refreshing frankness, that will repay the careful attention, not only of growers lacking in scientific training or of agricultural officers burdened by pressure of work, but of all professional plant pathologists whose duties compel them to wrestle with the difficult problem of disease in coconuts.

Out of the confused welter of complaints which were once grouped together (with a cheerful disregard for the presence or absence of the diagnostic symptom) under the name of 'bud-rot,' the author recognizes four distinct diseases: Bronze Leaf Wilt, Phythophthora Bud-Rot, Tapering Stem Wilt and Red Ring disease. To those associated with coconut cultivation in this country this list will seem incomplete. About 1921, Sharples began an investigation into the cause of a disease which (like other diseases in other countries) had in Malaya been masquerading as 'bud-rot' for some years. After more than ten years of careful and intensive work he came to the conclusion that neither Phytophthora bud-rot nor any other bud-rot which could be attributed to the parasitism of a micro-organism existed in Malaya, but, that the pathological condition which had been known, first as 'bud-rot,' and then as 'false bud-rot' was the consequence of disturbances set up by lightning discharges, and to this he gave the name of 'Lightning-Strike.' He regarded *Marasmius palmivorus* (an associated fungus) as the most prominent of the scavengers whose co-operative endeavours give rise to those visible manifestations of decay so well designed to mislead the unwary. He subsequently showed that rubber (*Hevea brasiliensis*) was also subject to this type of injury.

It was not by any oversight that Dr. Briton-Jones failed to include Lightning Strike in his list of the diseases which he regarded as descendants of the fabulous bud-rot. The omission was intentional. Largely no doubt because a similar effect had not been observed or recognized (or does not occur) in the West Indies he found it difficult to believe in its existence. He could not help feeling "that lightning effect has more than once been used as the easier alternative to thorough investigation of baffling symptoms." And these doubts as to the professional honesty of

Malayan plant pathologists were not all that troubled him. He found it difficult to understand "why tall coconut palms in Malaya are not subject to diseases known in every other coconut-growing country," or why these unfortunate palms should "suffer from natural phenomena of a magnitude not observed anywhere else."

Had Dr. Briton-Jones lived to revise this book himself the reviewer doubts whether he would have allowed either of these queries to stand. He would have recalled, for instance, that Red-Ring disease, whose home is the West Indies, occurs only on three or four out of those twenty odd islands. He would have remembered that wherever rubber is grown in South America, or in Trinidad, so may be found *Dothidella ulei*, but that, fortunately for the Far East and for this rubber-consuming age, this parasite has as yet failed to cross the ocean. All this is commonplace. The distribution of a crop is not necessarily synonymous with the distribution of its diseases.

The substance of the second query covers less familiar ground and its strangeness is a warning to step carefully. The reviewer does not know how frequent thunderstorms are in Trinidad or in others parts of the Caribbean area, but he feels that they could scarcely be more frequent than they are in Malaya. An analysis of the annual records published by the Malayan Meteorological Service discloses that in an area which, more or less, covers the coconut-growing districts of Selangor, thunderstorms occurred (on a five years' average) on approximately 50 per cent. of the days in any one year. (The actual figure is 48.7 per cent. This rate is not uniform being much higher in some months than others). These storms, which are naturally not stationary, may last for several hours. A simple observation on a distant storm at night shows that discharges of lightning may be taking place at the rate of three to four a minute. That is the Malayan picture. It would be interesting to know how it compares with its West Indian counterpart.

Plant pathologists in the West Indies may be puzzled by the paucity of the records of wilt disease that issue from this country. Wilt disease, which the reviewer spent some years studying in British Guiana when it was emerging, not altogether unaided, from its bud-rot phase, is now considered to arise as the result of a combination of factors of which the principal one is the employment of soils unsuitable for the crop. The deleterious effects of these soils are, it is found, often aggravated by injurious agricultural operations; and, it might be added, by the absence, at times, of any agricultural operations whatsoever.

The coconut industry of Malaya is based on an area of cultivated palms which covers more than half a million acres. In contradistinction to conditions not unknown in the western tropics, these palms are not planted on soils selected merely on the basis of their unsuitability for any other crop, nor have they been forced to wage a losing battle with the indigenous flora. Small areas of palms, growing in situations or on soils ill adapted to this crop, may occasionally be found suffering from what it is proper to diagnose as wilt. Such palms, however, bear much the same relation to the Malayan coconut industry as a group of soot-encrusted apple trees, struggling for existence in an urban backyard, do to the English fruit-growing industry.

R. A. A.

Notes and Comments.

EMPIRE ESSENTIAL OILS.*

The Empire's production of essential oils used in perfumery, medicine, and for industrial purposes is by no means inconsiderable. In recent years, there have been developments in this direction in Kenya, Palestine, Rhodesia, Tanganyika and the Seychelles. Nevertheless, if one compares the position of the essential oil industry of the British Empire with that of the industry in France and her colonies immediately prior to the outbreak of war, the conclusion cannot be avoided that the Empire's resources in the matter of essential oil production have been grossly neglected.

The position in which Great Britain finds herself to-day in the matter of the supply of essential oils must never be allowed to happen again. There are essential oils of which supplies from Empire sources are either inadequate or nil. Some of the necessary plants are quick-growing, and their cultivation in suitable climates should be put in hand at once. The same demand must be made in connexion with those plants which cannot be expected to yield for some considerable time. They must not be neglected because an immediate return is not to be expected. The long view is the essential one.

The following is a list of essential oils which are difficult to purchase in adequate quantities at reasonable prices, and to which it is suggested that producers should pay special attention: bergamot, cananga, caraway, geranium, lavender (French type), neroli, orris, rose, and vetiver.

Medicine also makes its demands. The Therapeutics Requirements Committee of the Medical Research Council has recently issued a preliminary report in which are lists of drugs of vegetable origin whose production, in the Committee's opinion, should be undertaken or increased in the United Kingdom (List A) and in the Empire overseas (List B). Included are a number of essential oils and essential oil yielding products and allied articles, as under:

List A: *Anethum (Dill), caraway, chamomile, fennel, hamamelis, *peppermint.

List B: *Balsam of tolu, *benzoin, *camphor, hamamelis, menthol, almond oil, oils of star anise, cade, chenopodium, lemon, peppermint, and *turpentine, *thymol.

The names of those considered by the Committee to be specially important are marked with an asterisk.

The article briefly discusses the essential oils the cultivation of which is or might be developed in various Empire countries. Of the tropical countries, India naturally takes a prominent position. Although a considerable number of aromatics are produced in India, many for home consumption, the resources of the country are so immense, and its soil and climate so varied, that there are few of the home country's needs in essential oils which India could not meet if her resources were thoroughly exploited, and the Indian essential oil industry properly organized in all

* Abstracted from *The Perfumery and Essential Oil Record*, January, 1941.

its departments. In particular, the production of vetiver and patchouli oils should be extended, and that of ajowan seed oil re-developed. Production of the latter oil was once impressive. Germany was India's chief customer for it, but synthetic thymol practically killed the trade.

Citronella oil is an important product of Ceylon, but it is highly desirable that more attention should be paid to quality which has tended to deteriorate in recent years. Native aromatic plants, such as vetiver, should not be neglected.

The resources of the African continent in native aromatic plants and its possibilities for the cultivation of others have by no means been fully exploited, even by the French. Passing reference has already been made to the good work which has been done and the important results achieved in Kenya, Tanganyika and Rhodesia. This work should be encouraged and further developed. It ought to be possible for Africa to satisfy the home country's full demands for the majority of citrus products. Attention might well be directed to the production of lemon and petitgrain oils and it might be possible to grow the gergamot orange somewhere within Empire domains in Africa.

There would appear to be a strong desire in the Seychelles to add to the Empire's store of useful aromatics, which is deserving of every encouragement. In particular, vanilla production calls for extension.

Production of essential oils in the British West Indies is practically restricted to bay, lime and pimento oils, the demands for which are thereby quite adequately met. More especially in Jamaica, the production of bitter and sweet orange oils might be encouraged. It is said that the demand for the bitter oil has, in the past, been too small, while the sweet orange oil industry has been practically killed by competition from French New Guinea.

The development and extension of Empire essential oil production calls for the solution of many problems. In some instances, it would seem that distillers have selected a plant because it grows wild abundantly and is cheap to collect, distilled it and placed the oil on the market in the hope of being able to create a demand for it. This policy is not altogether to be rejected, since hitherto unknown oils may be found suitable to meet old needs, or may, themselves, give rise to new ones. It is not, however, a policy good for general adoption. The prospective producer should study the home markets well in order to discover exactly what is needed. Then comes the problem of selecting from the list of needs those products which can be profitably met by products of his own terrain. Obtaining viable seed or other suitable planting material presents a further problem, but on all botanical and allied questions, the Imperial Institute and the Botanic Gardens at Kew are very willing to help prospective growers.

Technical and commercial problems arise connected with the cultivation and harvesting of the plant and its distillation. The producer will ask himself if the enterprise will pay, not merely while the world is at war and the home country's needs are being inadequately met, but also after the war, when he may have to face foreign competition. It is for this reason, perhaps, that those parts of the Empire where cheap native labour is available offer the best fields for further exploitation.

The above abstract from *The Perfumery and Essential Oil Record* presents the manufacturers' point of view. From the producers' point of view, however, the position is not so simple as it may be made to appear. Certain of these essential oils are suitable for cultivation in Malaya — patchouli, citronella and lemon grass — and have been produced on a commercial scale in the past, but the profit therefrom was small and uncertain and only the first-named has survived as an industry.

Past experience has shown that the essential oil market is very easily overloaded, and unless the producer can be assured of a market he cannot be expected to continue production in the hope of eventually finding a steady market.

Manufacturers would appear to be suffering at present from lack of supplies, due to war conditions, but there is no guarantee that, after the war, competition from foreign countries will not be as strong as formerly, nor that manufacturers will be at pains to maintain colonial connexions if undercutting methods are adopted by Continental competitors in an endeavour to regain their lost trade.

MEETING OF THE AGRICULTURAL ADVISORY COMMITTEE, 23rd APRIL, 1941.

At the meeting of the Agricultural Advisory Committee, held at the Department of Agriculture, Kuala Lumpur, on 23rd April, 1941, a number of important subjects were discussed, and the activities of the Department carefully reviewed.

Pineapple Industry. — The general position of the market and efforts directed to extend the market both in Malaya and elsewhere were discussed.

Tea. — The meeting was informed of the present position of the local industry in view of the International Tea Agreement and of sales of tea on contract with the Ministry of Food.

Rubber. — The main points of discussion were the provision of high-grade planting material for small-holders and the provision of recommended coagulants throughout the country.

Animal Husbandry. — Comments by a member of the Committee on the animal husbandry memoranda were examined in detail.

Poultry at Cameron Highlands. — The meeting was informed that Government had made provision for the extension of poultry investigations at Cameron Highlands.

Amongst other subjects brought up at the meeting were: — local honey and soil erosion.

Departmental.

FROM THE DISTRICTS.

Compiled in the Office of the Chief Field Officer from Monthly Reports of Agricultural Officers.

May, 1941.

The Weather.

In the north the rainfall was unevenly distributed. In South Perak the rainfall was above average and floods occurred, between the 15th and 21st of the month many roads becoming submerged. Similar wet weather prevailed throughout the west and southern parts of the country. In Pahang there was some rain early in the month, but latterly hot and dry conditions prevailed.

Crop Reports.

Rubber. — In the big towns, the price of good quality smoked sheet reached $51 per picul; in country districts the price ranged between $46 and $49.50 per picul.

In Johore sulphuric acid is still a common coagulant. Supplies of acetic acid in the hands of small dealers in the State were reported to be inadequate. Stocks of sulphuric acid in Perak and Pahang are now becoming exhausted and small-holders are using acetic acid instead. Some inconvenience was caused by a temporary shortage of this acid. In Pahang supplies were issued from reserve stock held by the Department. In one area in Perak the preparation of lump rubber was noted; this was also attributed to the shortage of acetic acid.

It is reported that a total of 3,034 acres of rubber on small or medium holdings in Selangor has now been budgrafted. Of this area 1,982 acres are owned by Chinese, 850 acres by Indians and 202 acres by Malays.

Owing to the war, supplies of barbed wire are difficult to obtain. In Johore a European-owned estate in the Segamat district has installed an electric fence round a young rubber area to protect it from wild animals. This fence has attracted much attention in the locality, and numerous enquiries have been received from Chinese and Indian owners of rubber holdings. This type of fence is cheap to erect and maintain and may prove very valuable in carrying out replanting at the present time.

On replanted areas in Kinta and Batang Padang, Perak, it has been noted that a common fault is delay in planting the cover crop, with the result that it is then difficult satisfactorily to establish the cover.

Padi. — It is now known that in Kedah the 1940-41 crop was the largest that has yet been reaped, the total yield being approximately 101,000,000 gantangs (241,666 tons). This is slightly higher than the previous record of 100,483,000 gantangs for the season 1938-39. Serious damage from heavy rainfall at harvest

in parts of North Kedah was offset by a better crop in Kuala Muda, and by the new areas which have been brought under cultivation. The harvest was carried out under the double disadvantage of wet weather and a serious shortage of labour; this has necessarily had an effect on the quality of the grain in many localities, but in view of the poor yields obtained from most padi areas in the Federated Malay States and Straits Settlements, the production of a record crop in Kedah must be regarded as a satisfactory achievement.

Cultivation for the new season has now commenced.

In Krian, irrigation water has been turned on and cultivation has commenced in some places.

In Stage III of the Sungei Manik area wet padi gave an average yield of 125 gantangs per acre and dry padi 107 gantangs per acre. Yields from the longer established areas have not yet been estimated but it is expected that they will be less than the previous season, partly because of the bad weather at harvest time. Clearing and bunding in Stage III in preparation for the new season has now commenced. Work in Stage IV has been held up by floods.

Cultivation in the Kuala Lipis District of Pahang has commenced under favourable conditions.

In the Kuala Selangor area the harvest is now over. The old area at Sempadan gave a satisfactory crop. At Sungei Burong, Sekinchang and Pasir Pajang the crop has been a failure. In the old area at Sungei Burong the failure is attributed to late planting, while in the newly-cleared areas where the seed was sown by broadcasting, the crop was never more than a very uncertain gamble.

In the Panchang Bedena area, where a comparatively good crop was produced, over 4,000 acres of old uncultivated padi land has been re-alienated. The new settlers came from many different areas. Growers in this area are paying greater attention to storing supplies of grain; storage bins are constructed by the cultivators themselves and follow a traditional pattern.

A solution to the problem of labour shortage at harvest time is being sought. Stacking the unthreshed padi in the field to be threshed later when the rush of reaping is over (the common practice when growing grain crops in other countries) is a possible solution which is now under trial. The first results of the trial in Perak and Kelantan have been promising. The stacks dried out well and losses due to rats, "white-ants" or moisture have been slight. Further trials under all weather conditions will have to be carried out before it will be possible to recommend this method for general adoption.

Livestock. — The feeding of cattle in rice areas during the period the padi fields are closed to grazing is always a difficult problem and cattle almost invariably lose condition at that time of the year. In many rice countries padi straw is fed to cattle mixed with other feeding stuffs during this period, but the practice is not a common one in Malaya. In order to investigate to what extent padi straw can be used with advantage as a cattle food in this country, investigations are in progress at several Agricultural Stations. No clear cut results have yet been obtained but

it has been established that Malayan cattle are generally unwilling to eat straw and some individual animals eat it so sparingly that they lose condition very rapidly. Some animals fed on a mixture of straw and grass have maintained fair condition. One particular lot of bullocks at Kota Bharu Experiment Station, Kelantan, receiving a ration of padi straw with and without coconut cake have now increased their consumption of straw to between 12 and 14 lbs. They also get a little grazing when turned out for exercise. On this diet they are maintaining their condition well and are attracting a good deal of interest from local cattle owners.

Tobacco. — Shortage of imported cigarettes has caused a further increase in the price of locally-grown leaf. The price in Malacca increased from $60 to $85 per picul. In the Jerantut area in Pahang $90 per picul is being offered but supplies are limited. The price of cigarettes manufactured in the Malacca factories has increased slightly. The new factory in Malacca is making a better type of cigarette and is now producing a cork-tipped brand which is proving popular.

MALAYAN AGRICULTURAL EXPORTS, FEBRUARY, 1941.

Product	Net Exports in Tons				
	Year 1940	Jan./Feb. 1940	Jan./Feb. 1941	February 1940	February 1941
Arecanuts ...	43,915	8,108	9,943	3,389	5,009
Coconuts fresh†‡ ...	131,469†	11,245†	31,696†	4,138†	18,328†
Coconut oil‡ ..	69,446	9,623	13,536	3,979	7,005
Copra‡ ...	9,904*	1,248*	6,467*	458	2,154*
Copra cake ...	1,215*	2,382	6,028*	1,879	720*
Gambier, all kinds ...	821	103	29	57	109
Palm kernels ...	9,219	1,316	1,540	570	465
Palm oil ...	55,990	6,605	8,218	3,659	3,857
Pineapples, canned ...	40,243	9,615	3,174	4,031	1,319
Rubber¶ ...	549,327¶	93,646¶	97,654¶	35,966¶	44,822¶
Sago,—flour ...	2,525	1,184*	393	168	1,027*
,, —pearl ...	4,848	726	1,098	352	883
,, —raw ...	4,816*	882*	324*	545*	167*
Tapioca,—flake ...	762	208	66	72	30
,, —flour ...	2,649*	248*	198*	91*	87*
,, —pearl ...	17,004	1,387	3,073	1,161	1,474
Derris ...	1,258	266	168	123	119
‡Copra equivalent ...	108,468	14,614	16,726	7,007	9,887

† hundreds in number. * net imports. ¶ production.

Statistical.

MARKET PRICES.

May, 1941.

Rubber. — The Singapore market fluctuated considerably during the month, and prices ranged from 39¾ to 41¾ cents per lb. No. 1. X. Ribbed Smoked Sheet opened at 40¾ cents per lb., and rapidly rose to over 41 cents; it fell back on the 21st May to 40 cents at which level it closed after further weakening to 39¾ cents.

The average of daily quotations for the month was 40.80 cents per lb., as compared with 39.39 cents in April. The London average price was 13.91 pence per lb., and New York 23.76 cents gold, as compared with 14.22 pence and 22.61 cents gold in April.

Prices paid for small-holders' rubber at three centres during the month are given in Table I.

Table I.

Weekly Prices Paid by Local Dealers for Small-Holders' Rubber, May, 1941.

(Dollars per picul of 133 1/3 lbs.)

Grades	Kuala Kangsar, Perak				Kuala Pilah, Negri Sembilan		Batu Pahat, Johore.			
	7	14	21	28	15	29	7	14	21	28
Smoked Sheet ...	46.84	47.17	48.50	—	—	46.50	47.00	—	—	46.00
Unsmoked Sheet ...	40.00	44.00	44.00	42.00	46.00	45.50	45.50	47.48	43.50	—
Scrap ...	—	—	—	—	—	—	—	—	—	—

Transport by F.M.S.R. lorry service Kuala Pilah to Seremban 12 cents per picul; by rail Seremban to Penang $1.24 per picul, Seremban to Singapore $8 per ton.

Transport from Batu Pahat to Singapore by lorry, excluding duty, 90 cents per picul.

Transport from Kuala Kangsar to Prai by railway $6.20 per ton.

At Kuala Pilah the standard deduction for moisture in unsmoked sheet is 5 per cent.

No purchases at Kuala Pilah on 1st, 8th, and 22nd May.

Table II.

Singapore Prices of Various Agricultural Products.

Product	May, 1941			April, 1941	Average Price 1940
	Highest	Lowest	Average	Average	
	per picul $	per picul $	per picul $	per picul $	per picul $
Copra :					
Sundried ...	2.50	2.50	2.50	2.50	3.08
Mixed ...	2.25	2.25	2.25	2.25	2.76
Coconut Oil ...	—	—	7.50	7.50	8.29
Copra Cake No. 1 ...	2.35	2.35	2.35	‡	1.43
No. 2 ...	2.00	1.60	1.76	1.60	‡
Pineapples, Canned :*					
G.A.Q. : Cubes ...	4.85	4.85	4.85	4.85	4.85
Sliced ...	4.80	4.80	4.80	4.80	4.80
Tall ...	4.95	4.95	4.95	4.95	4.95
Golden : Cubes ...	5.45	5.45	5.45	5.45	5.45
Sliced ...	5.40	5.40	5.40	5.40	5.40
Tall ...	5.55	5.55	5.55	5.55	5.55
Coffee :					
Liberian ...	16.50	16.50	16.50	15.75	16.10
Excelsa ...	13.50	13.50	13.50	12.75	13.69
Robusta ...	10.50	9.50	10.25	9.75	8.92
Palembang ...	22.50	20.00	20.10 - 22.30	14.12 - 16.38	13.00†
Sourabaya ...	20.50	18.00	18.30 - 20.30	15.38 - 18.56	14.80†
Arecanuts :					
Best ...	6.50	5.75	6.12	6.08	5.65
Medium ...	6.25	5.25	5.75	5.50	5.24
Mixed ...	5.75	5.00	5.35	5.12	4.88
Splits ...	7.85	5.50	5.55 - 7.52	5.56 - 7.44	6.33†
Red Whole ...	18.00	15.00	15.00 - 17.00	7.44 - 9.06	6.67†
Sliced ...	25.00	19.00	19.95 - 23.10	19.00 - 21.81	10.79†
Pepper :					
Singapore Black ...	7.25	7.25	7.25	7.12	7.29
Singapore White ...	14.50	14.00	14.30	13.88	‡
Muntok White ...	15.00	14.50	14.80	14.44	13.51
Nutmegs :					
110's ...	23.00	23.00	23.00	23.25	26.11
80's ...	25.00	24.00	24.40	24.00	30.65
Penang, dried¶ ...	—	—	15.00	16.50	21.00
Mace :					
Sinuw ...	‡	‡	‡	‡	‡
Amboina ...	‡	‡	‡	‡	39.85
Penang, dried¶ ...	—	—	35.00	40.00	63.50
Cloves :					
Zanzibar ...	41.00	39.50	40.00	40.50	‡
Amboina ...	43.00	41.00	41.90	42.50	‡
Penang, dried¶ ...	‡	‡	‡	‡	72.00

* per case of 48 cans of 1¼ lbs. each. † Highest of the average monthly range quotations.

¶ Penang prices. ‡ Not quoted.

Product	May, 1941			April, 1941	Average Price 1940
	Highest	Lowest	Average	Average	
	per picul $	per picul $	per picul $	per picul $	per picul $
Gambier :					
Block ...	‡	‡	‡	‡	‡
No. 1 Cube ...	14.50	14.50	14.50	14.50	15.00
Sago :					
Pearl ...	8.87½	8.75	8.77	8.84	7.79
Flour, Sarawak Fair ...	5.60	4.90	5.28	5.16	4.95
Tapioca :					
Flake Fair ...	6.50	6.50	6.50	6.75	8.08
Seed Pearl ...	8.25	8.25	8.25	8.22	9.45
Medium Pearl ...	8.00	8.00	8.00	8.12	9.07

Palm Oil. — No recent information is available regarding prices paid in the United Kingdom for Malayan palm oil.

Local sales of palm oil in sellers' drums were made during May at the following prices per ton :— bleached oil 5 per cent. f.f.a., c.i.f. Colombo $205; unbleached oil 5 per cent. f.f.a. f.o.b. Singapore $160 and $175.

Rice. — The Singapore average wholesale prices of rice per picul in May were as follows :— Thailand Broken 1st Grade "A" $6.82, Thailand Broken 2nd Grade "A" $6.57, Burma S.Q. Meedone $6.06, Burma Parboiled Milchar No. 2 $5.21. Thailand 3rd Grade "A" and Annam White Rice No. 1 were not quoted.

The March average retail price of No. 2 Thailand rice in Singapore was 45 cents per gantang (gallon). Penang and Malacca were not quoted.

The average declared trade value of imports during March was $6.30 per picul, as compared with $6.37 in February and $6.47 in January.

Padi. — The Government Rice Mills, Perak, are paying a guaranteed price of $2.50 per picul for padi, plus a bonus of 10 cents per picul for pure strain S.K. 48 padi. The Teluk Anson mill paid $3.20 per picul in May.

Retail prices of padi in cents per gantang (gallon) were as follows :— Penang and Province Wellesley 12½; Perak South, Sungei Manik 10 to 11, Teluk Anson 12 to 13, Kinta and Batang Padang 18 to 20; Selangor, coast districts 9½ to 11, Kuang 15 to 16; Pahang North 15 to 20; Pahang South 16 to 22; Kelantan 14.

Tea. — There are no London tea sales.

The latest Colombo prices available, quoted from The *Ceylon Tea Market Report* of 27th May 1941 of the Colombo Brokers' Association are as follows, in rupees per lb. : High Grown Rs. 1.16, Medium Grown Rs. 1.08 Low Grown Rs. 1.02.

Cardamoms. — Green cardamoms were quoted in *The Ceylon Chamber of Commerce Weekly Report* of 26th May 1941 from Rs. 2.05 to Rs. 2.27 per lb.

Derris. — Owing to shortage of shipping space to the United Kingdom and the United States prices tended to weaken and little business was done. Average prices per picul for May were as follows: $9 to $10.50 for roots sold on a basis of ether extract; $17.50 to $22 for roots with 4 to 5 per cent. rotenone content, rising to $26.50 to $28 for 7 to 9 per cent. rotenone.

Tobacco. — Prices of prepared tobacco per picul in Kelantan were: 1st quality $110 to $150, 2nd quality $100 to $120, 3rd quality $80 to $85. Prices of dried leaf per picul were as follows:— Penang and Province Wellesley 1st quality $48.62, 2nd quality $41; Perak South $80 to $90, $60 to $80, $50 to $70, Teluk Anson prepared tobacco $1 to $1.30 per kati; Pahang $60 to $70, $40 to $60, $25 to $48; Selangor, cut tobacco, coast districts $1.25 to $2.50 per kati.

The above prices are based on London and Singapore daily quotations for rubber, on the Singapore daily prices for copra, on the Singapore Chamber of Commerce Weekly Reports for the month and on other local sources of information. Palm oil reports and certain coffee prices are kindly supplied by Guthrie & Co., Ltd., Kuala Lumpur, local palm oil prices by Whittall & Co., Kuala Lumpur, the Singapore prices of imported coffee and arecanuts by Lianqui Trading Company of Singapore, and Singapore derris prices by Hooglandt & Co., Singapore.

1 picul = 133 1/3 lbs. The dollar is fixed at 2s. 4d.

Note. — The Department of Agriculture will be pleased to assist planters in finding a market for agricultural produce. Similar assistance is also offered by the Malayan Information Agency, 57, Trafalgar Square, London, W.C.2.

FERTILIZER PRICES, JUNE, 1941.

The following are the prices current for the month of June 1941 of the more important fertilizers of which stocks are available.

	per ton $	
Nitrate of soda	125	
Muriate of potash	200	
Rock phosphate (Christmas Island)	39	($35 Singapore).
Lime	20	

Quotations are *ex* warehouse, Port Swettenham, Klang, Singapore and Penang.

Supplies of sulphate of ammonia, superphosphate, basic slag, calcium cyanamide, sulphate of potash, and rock phosphate (Gafsa) are not available.

MALAYAN AGRICULTURAL EXPORTS, MARCH, 1941.

Product	Net Exports in Tons				
	Year 1940	Jan./March 1940	Jan./March 1941	March 1940	March 1941
Arecanuts ...	43,915	11,888	15,143	3,780	5,200
Coconuts fresh†‡ ...	131,469†	19,803†	60,287†	8,558†	28,591†
Coconut oil‡ ..	69,446	15,759	20,764	6,136	7,227
Copra‡ ...	9,904*	4,371*	11,101*	3,123*	4,634*
Copra cake ...	1,215*	3,154	5,938*	772	90
Gambier, all kinds ...	821	313	17	210	12*
Palm kernels ...	9,219	2,106	1,700	790	160
Palm oil ...	55,990	12,007	10,317	5,402	2,099
Pineapples, canned ...	40,243	12,651	4,287	3,036	1,113
Rubber¶ ...	549,327¶	125,476¶	136,719¶	31,830¶	39,065¶
Sago,—flour ...	2,525	245	838	1,430	445
,, —pearl ...	4,848	933	1,674	207	576
,, —raw ...	4,816*	1,464*	874*	582*	550*
Tapioca,—flake ...	762	275	104	67	38
,, —flour ...	2,649*	409*	210*	161*	13*
,, —pearl ...	17,004	2,947	4,955	1,560	1,882
Derris ...	1,258	370	258	104	90
‡Copra equivalent ...	108,468	21,978	24,711	7,019	7,982

† hundreds in number. * net imports. ¶ production.

MALAYAN PRODUCTION OF PALM OIL AND KERNELS

(In long tons, as declared by Estates)

Month 1941	Palm Oil			Palm Kernels		
	F.M.S.	U.M.S.	Malaya	F.M.S.	U.M.S.	Malaya
January	1,872.7	1,221.4	3,094.1	170.3	150.0	320.3
February	1,698.3	993.2	2,691.5	167.1	179.3	346.4
March	2,179.8	1,710.1	3,889.9	180.5	274.9	455.4
April	1,993.0	1,870.8	3,863.8	176.3	204.0	380.3
Total	7,743.8	5,795.5	13,539.3	694.2	808.2	1,502.4
Total January to April, 1940 ...	8,131.3	8,086.4	16,217.7	1,711.5	1,709.1	3,420.6
Total for the year 1940	29,875.2	28,096.9	57,972.1	4,513.1	5,098.1	9,611.2

Stocks on estates as at 30th April, 1941 were: palm oil 3,689 tons, palm kernels 1,342 tons.

ACREAGES OF TAPPABLE RUBBER ACTUALLY TAPPED AND NOT TAPPED ON ESTATES OF 100 ACRES AND OVER, FOR THE MONTH ENDING 30TH APRIL, 1941.

STATE OR TERRITORY	Estimated Acreages of Tappable Rubber (9)+(11)	ACREAGES OF TAPPABLE RUBBER NOT TAPPED				Area of tappable rubber never been tapped (b)		Total area not tapped (3)+(5) (c)		TOTAL AREA TAPPED DURING THE MONTH		Area of tappable rubber rested under rotational systems (c)	
		On estates which have entirely ceased tapping		On estates which have partly ceased tapping (a)									
		Acreage	Percentage of (3) to (2)	Acreage	Percentage of (5) to (2)	Acreage	Percentage of (7) to (2)	Acreage	Percentage of (9) to (2)	Acreage	Percentage of (11) to (2)	Acreage	Percentage of (13) to (2)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
S.S.—													
Province Wellesley ...	42,071	nil	nil	5,110	12.1	288	0.7	5,110	12.1	36,961	87.9	7,688	18.3
Malacca ...	109,577	1,095	1.0	6,826	6.2	439	0.4	7,921	7.2	101,656	92.8	15,919	14.5
Penang ...	2,596	nil	nil	576	22.2	35	1.3	576	22.2	2,020	77.8	60	2.3
Singapore ...	29,058	1,754	6.0	5,089	17.5	304	1.0	6,843	23.5	22,215	76.5	2,056	7.1
Total S.S. ...	183,302	2,849	1.6	17,601	9.6	1,066	0.6	20,450	11.2	162,852	88.8	25,723	14.0
F.M.S.—													
Perak ...	273,565	250	0.1	15,518	5.7	2,918	1.1	15,768	5.8	257,797	94.2	29,697	10.9
Selangor ...	301,272	8,949	3.0	13,139	4.3	1,886	0.6	22,088	7.3	279,184	92.7	32,045	10.6
Negri Sembilan ...	247,149	1,905	0.8	22,144	8.9	4,089	1.7	24,049	9.7	223,100	90.3	20,211	8.2
Pahang ...	84,877	187	0.2	7,151	8.4	2,173	2.6	7,338	8.6	77,539	91.4	3,221	3.8
Total F.M.S. ...	906,863	11,291	1.2	57,952	6.4	11,066	1.2	69,243	7.6	837,620	92.4	85,174	9.4
U.M.S.—													
Johore ...	466,767	5,433	1.1	38,188	8.2	17,845	3.8	43,621	9.3	423,146	90.7	49,982	10.7
Kedah ...	189,369	4,689	2.5	9,305	4.9	3,931	2.1	13,994	7.4	175,375	92.6	22,836	12.1
Kelantan ...	30,393	403	1.3	4,093	13.5	715	2.4	4,496	14.8	25,897	85.2	2,129	7.0
Trengganu (d) ...	4,817	nil	nil	nil	nil	nil	nil	nil	nil	4,817	100.0	1,661	34.5
Perlis (e) ...	1,260	nil	nil	202	16.0	90	7.1	202	16.0	1,058	84.0	194	15.4
Brunei ...	6,134	nil	nil	1,231	20.1	288	4.7	1,231	20.1	4,903	79.9	763	12.4
Total U.M.S. ...	698,740	10,525	1.5	53,019	7.6	22,869	3.3	63,544	9.1	635,196	90.9	77,565	11.1
Total MALAYA ...	1,788,905	24,665	1.4	128,572	7.2	35,001	2.0	153,237	8.6	1,635,668	91.4	188,462	10.5

Notes.—(*a*) Area out-of-tapping on estates which have partly ceased tapping refers to areas definitely being rested and excludes areas on any tapping round.

(*b*) The acreage shown in column (7) is included in columns (3) and (5).

(*c*) Areas of tappable rubber rested under rotational systems are not considered as out-of-tapping and therefore (11) and (12) include columns (13) and (14) respectively.

(*d*) Registered companies only.

(*e*) ... 31st December, 1940.

ACREAGE, STOCKS, PRODUCTION, IMPORTS AND EXPORTS OF RUBBER, INCLUDING LATEX, CONCENTRATED LATEX AND REVERTEX, FOR THE MONTH OF APRIL, 1941, IN DRY TONS.

State or Territory	Stocks at beginning of month 1			Production by Estates of 100 acres and over		Production by Estates of less than 100 acres estimated 2		Imports				Exports including re-exports				Stocks at end of month			Consumption 3	
								during the month		January to April 1941		during the month		January to April 1941						
	Ports	Dealers	Estates of 100 acres and over	during the month	Jan. to April 1941	during the month	Jan. to April 1941	Foreign	From Malay States	Foreign	From Malay States	Foreign	Local	Foreign	Local	Ports	Dealers	Estates of 100 acres and over	during the month	Jan. to April 1941
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
MALAY STATES :—																				
Federated Malay States ...	...	4,386	19,417	14,124	61,834	15,924	35,356	Nil	Nil	Nil	Nil	15,210	9,461	52,189	41,752	...	10,856	18,176	148	571
Johore ...	...	1,711	6,673	7,087	29,400	7,735	22,809	Nil	11	Nil	31	2,992	10,725	10,901	41,011	...	3,228	6,272	...	...
Kedah ...	...	190	4,325	3,561	15,010	2,048	6,341	Nil	Nil	Nil	Nil	1,833	3,420	5,343	16,190	...	810	4,061	...	...
Perlis ...	...	22	34	20	77	37	121	Nil	Nil	Nil	Nil	Nil	49	Nil	200	...	37	27	...	...
Kelantan ...	...	255	448	411	1,802	910	2,586	Nil	Nil	Nil	Nil	223	866	625	3,521	...	415	550	...	...
Trengganu ...	...	90	141	192	823	580	1,652	Nil	Nil	Nil	Nil	5	741	15	2,365	...	139	118	...	...
Brunei ...	..	10	35	59	244	75	412	...	...	...	...	...	121	...	641	...	9	50	...	...
Total Malay States	...	6,664	31,074	25,484	109,190	27,309	69,277	Nil	11	Nil	31	20,263	25,383	69,073	105,680	...	15,494	29,254	148	571
S. SETTLEMENTS :—																				
Malacca ...	...	1,511	1,894	1,504	6,301	1,256	3,634	Nil		Nil		2,801		12,199		...	2,686	1,754	...	...
Province Wellesley	...	2,147	831	565	2,335	302	1,013	Nil		Nil		9,837		42,707		...	3,015	717	...	...
Penang ...	4,954	4,721	9	24	93	76	412	1,091	27,728	6,928	101,861		Nil		Nil	3,989	5,276	16	...	...
Singapore ...	12,512	18,839	272	193	748	155	621	25,700		85,137		35,036		103,476		10,279	22,541	240	29	104
Labuan ...	...	20	Nil	Nil	Nil	9	62	60		252		Nil		Nil		...	61	Nil	...	...
Total Straits Settlements ...	17,466	27,238	3,006	2,286	9,477	1,798	5,742	26,851	27,728	92,317	101,861	47,674	Nil	185,382	Nil	14,268	33,579	2,727	29	104
Total Malaya ...	17,466	33,902	34,080	27,770	118,667	29,107	75,019	26,851	27,739	92,317	101,892	67,937	25,383	254,455	105,680	14,268	49,073	31,981	177	675

TABLE II
DEALERS' STOCKS, IN DRY TONS 3

Class of Rubber	Federated Malay States	S'pore	Penang	P.We'sly M'cca, Labuan &Brunei	Johore	Kedah
22	23	24	25	26	27	28
DRY RUBBER	9,511	21,478	4,947	5,261	2,413	411
WET RUBBER	1,345	1,063	329	510	815	399
TOTAL ...	10,856	22,541	5,276	5,771	3,228	810

TABLE III
FOREIGN EXPORTS

PORTS	For month	Jan. to April 1941
29	30	31
Singapore ...	48,548	175,899
Penang ...	13,332	53,574
Port Swettenham.	6,057	24,760
Malacca ...	Nil	222
TOTAL ...	67,937	254,455

TABLE IV
DOMESTIC EXPORTS 4

AREA	For month	Jan. to April 1941
32	33	34
Malay States ...	45,481	174,455
Straits Settlements	3,771	14,967
MALAYA ...	49,252	189,422

Notes:—

1. Stocks on estates of less than 100 acres and stocks in transit on rail, road or local steamer are not ascertained.
2. The production of estates of less than 100 acres is estimated from the formula: Production + Imports + Stocks at beginning of month = Exports + Stocks at end of month. + Consumption, *i.e.*, Column [7] = Columns [13] + [14] + [17] + [18] + [19] + [20] — [2] — [3] — [4] — [5] — [9] — [10]. For the Straits Settlements the production of estates of less than 100 acres is represented by sales or exports as shown by cess paid.
3. Dealers' stocks in the Federated Malay States are reduced to dry weights by the following fixed ratios: unsmoked sheet, 15% wet sheet, 25% scrap, lump, etc., 40%; stocks elsewhere are in dry weights as reported by the dealers themselves.
4. Columns (33) and (34) represent exports of rubber subject to regulation which, for Singapore and Penang Islands are represented by sales or exports as shown by cess paid.
5. All statements are brought up to date monthly, and any inaccuracies that may be disclosed are corrected in the totals; the latest publication therefore, is always the most reliable.
6. The above, with certain omissions, is the Report published by the Registrar-General of Statistics, S.S and F.M.S., at Singapore on 27th May, 1941

METEOROLOGICAL SUMMARY, MALAYA, APRIL, 1941.

Locality.	Air Temperature in degrees Fahrenheit							Earth Temperature		Rainfall								Bright Sunshine.		
	Means of			Absolute Extremes								Number of days.								
	A. Max.	B. Min.	Mean of A and B	Highest Max.	Lowest Min.	Lowest Max.	Highest Min.	At 1 foot	At 4 feet	Total.		Most in a day.	Precipitation .01 in or more	Precipitation, .04 in or more	Thunder-storm	Fog morning obs.	Gale force 8 or more	Total.	Daily Mean.	Per cent.
												Amt.								
	°F	°F	°F	°F	°F	°F	°F	°F	°F	in.	mm.	in.						hrs.	hrs.	
Kuala Lumpur Aerodrome, Selangor ...	93.3	75.1	84.2	†	†	†	†	86.9	87.2	12.18	309.4	†	17	16	14	6	—	204.40	6.81	56
Port Swettenham Aerodrome, Selangor ...	91.1	74.3	82.7					87.5	86.6	9.59	243.6		14	9	6	—	1	225.90	7.53	62
Sitiawan, Perak ...	91.0	75.1	83.1					85.9	86.1	6.47	164.3		21	16	6	—	—	238.30	7.94	65
Ipoh Aerodrome, Perak ...	92.6	74.5	83.5					85.4	85.9	10.84	275.3		25	22	6	—	—	221.20	7.37	61
Temerloh, Pahang ...	92.9	74.5	83.7					87.9	88.7	5.95	151.1		16	13	3	9	—	200.55	6.69	55
Kuala Lipis, Pahang ...	92.4	74.4	83.4					85.7	86.6	6.84	173.7		16	12	3	23	—	188.50	6.28	51
Kuala Pahang, Pahang ...	88.9	76.4	82.7					88.4	88.8	9.71	246.6		17	13	—	—	—	243.45	8.11	66
Kallang Aerodrome, S'pore ...	88.5	77.3	82.9					84.2	85.1	9.48	240.8		13	10	4	—	—	175.40	5.85	48
Bayan Lepas Aerodrome Penang ...	89.7	76.2	82.9					86.5	86.6	13.38	339.9		23	16	4	—	—	223.60	7.45	61
Malacca Town, Malacca ...	88.2	75.7	81.9					86.2	87.1	6.45	163.8		14	12	2	—	—	220.55	7.35	60
Kluang, Johore ...	91.2	73.0	82.1					82.9	83.8	16.87	428.5		25	20	10	16	3	182.05	6.07	50
Mersing, Johore ...	88.9	74.5	81.7					85.7	84.9	3.85	97.8		11	11	2	—	1	243.70	8.12	67
Alor Star, Kedah ...	92.0	75.7	83.9					87.4	87.8	8.24	209.3		17	14	9	1	—	257.30	8.58	70
Kota Bahru, Kelantan ...	90.9	75.7	83.3					86.0	85.3	5.84	148.3		12	10	1	1	—	233.40	7.78	64
Kuala Trengganu, Trengganu	88.7	75.2	81.9					86.1	86.5	7.09	180.1		10	8	3	2	—	239.05	7.97	65
Labuan ...	89.7	78.8	84.3					88.3	89.4	12.73	323.3		10	8	2	—	—	273.80	9.13	75
HILL STATIONS.																				
Fraser's Hill, Pahang, 4268 ft.	75.3	64.7	70.0					74.0	73.8	8.49	215.6		22	17	1	9	—	142.00	4.73	39
Cameron Highlands, Tanah Rata, Pahang 4750 ft. ...	75.3	58.2	66.7					72.2	70.8	5.32	135.1		25	23	1	—	—	152.10	5.07	41
Cameron Highlands, Rhododendron Hill, Pahang 5120 ft. ...	74.6	62.2	68.4					*	*	4.83	122.7		26	20	—	—	—	188.00	6.27	51

* Not recorded.